REMARKS

Claims 25-49 remain in the application including independent claims 25, 35, and 41. Claims 1-24 have been cancelled. Claims 46-49 are indicated as allowable.

The amendments to the claims and the specification are not related to any rejection or objection set forth in the subject official action. The claims and the specification have been amended solely to provide consistent terminology and eliminate duplicate numbering. Substitute drawings are included with this response.

Claim 33 is objected to as being a duplicate of claim 32. Applicant disagrees. Claim 32 includes the step of "using common hardware for each different seat sensor configuration." Claim 33 includes the step of "using identical hardware for each different seat sensor configuration." The term "identical" does not have the same meaning as the term "common." For example, according to Merriam Webster's Collegiate Dictionary, Tenth Edition, Merriam-Webster, Incorporated, 1994, the term "common" means "occurring or appearing frequently" while the term "identical" means "being the same." Thus, applicant asserts that claim 33 is not a duplicate of claim 32 and requests that the examiner withdraw the objection.

Claims 25-28, 30-32, 34-36, 38-39, and 41-42 stand rejected under 35 U.S.C. 103(b) as being anticipated by Blackburn (US 5624132). Claim 25 requires mapping occupant weight signals from sensors into a virtual matrix and determining seat occupant weight based on output from the virtual matrix. Blackburn does not disclose this feature.

The examiner argues that Blackburn discloses mapping the weight signals into a virtual matrix, citing column 9, lines 57-65. Applicant disagrees. Column 9, lines 57-65, which corresponds to Figure 10, simply shows the actual physical sensor layout configuration in the seat bottom. This embodiment of the Blackburn invention includes an occupant weight and position sensor 260 that is mounted within the seat bottom (see Figure 9). "The occupant seat 234 with which the occupant restraint system 220 is used is preferably a passenger seat in the vehicle. The seat 234 includes an occupant position and weight sensor 260 located in the bottom cushion 262 of the seat 234." Col. 9, lines 11-15.

Figure 10 indicates that the weight and position sensor 260 comprises a sensor array that includes a plurality of position sensors 300 and a plurality of weight sensors 302. Both the position 300 and weight 302 sensors are physically mounted in the seat bottom in the specified array arrangement. Thus, there is no virtual matrix into which weight signals from the weight sensors are mapped.

In a previous response, the examiner argued that applicant discloses: "One occupant weight signal from each sensor is mapped into one corresponding seat sensor position in the optimal pattern. Typically, there are more virtual seat sensors positions in the virtual matrix than there are physical seat sensors mounted within the seat. The difference between the number of virtual cell locations in the virtual matrix and the number of physical sensors mounted within the seat bottom define a remaining number of virtual cell positions," citing page 3, paragraph 3 of the subject application.

First, applicant assumes the examiner is referring to paragraph [9] of the subject application, which is the third paragraph on page 3. Second, the text from which the examiner quotes, is applicant's "Summary of the Invention" portion of the application. Thus, the only information that applicant has "disclosed" in paragraph [9] of the subject application, is a description of the unique features pertaining to the subject invention. The examiner is arguing that applicant's invention is well known based on the description of the applicant's invention. This argument is confusing because it seems that the examiner is arguing that paragraph [9] of the "Summary of Invention" is some form of admitted prior art, which it is not. Applicant strongly objects to the examiner using applicant's own disclosure of the invention as a basis for rejecting applicant's claims. This is not the proper basis for a rejection under 35 U.S.C. 102(b).

Further, there simply is no disclosure, suggestion, or teaching in Blackburn of mapping the weight signals from physical weight sensors, mounted within the seat, into a virtual matrix, with subsequent determination of occupant weight based on the data mapped into the virtual matrix as set forth in the claims. The examiner previously argued that it is "well understood by one skill in the art that a virtual matrix is a specific way to allocate certain data/information that is in a table/array (columns and rows) order as Blackburn does (column 11, lines 15-25)." The support that the examiner cites for this proposition, as discussed above, refers to applicant's "Summary of the Invention" portion of the subject application. Again, this is not a proper basis for a rejection.

Also, column 11, lines 15-25 of Blackburn simply states that occupant weight is used to control airbag deployment. The look-up table mentioned in this section of Blackburn refers to a deployment table that lists different deployment initiation times after a crash has occurred for different occupant weights. "Depending upon the weight of the occupant and his related theoretical anatomical dimensions, the airbag 226 is deployed in a crash condition at a time after the onset of a crash which is derived from, preferably, a look-up table." Col. 11, lines 16-19. There is no mention of any type of "virtual matrix" or any type of mapping or transferring of data from a weight sensor physically positioned in a seat into a virtual matrix. Thus, Blackburn does not utilize a virtual matrix as set forth in claim 1 to determine occupant weight.

Further, while it is well settled that terms in a claim are to be given their broadest reasonable interpretation, this interpretation must be consistent with the specification, with claim language being read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Bond 910 F. 2d 831, 833, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990). As defined at http://dictionary.reference.com/search?q=virtual (citing The Free On-line Dictionary of Computing, © 1993-2003 Denis Howe) the word "virtual" means:

> 1. Common alternative to logical; often used to refer to the artificial objects (like addressable virtual memory larger than physical memory) created by a computer system to help the system control access to shared resources.
>
> 2. Simulated; performing the functions of something that isn't really there. An imaginative child's doll may be a virtual playmate.
>
> Opposite of real or physical.

In interpreting Blackburn, the examiner has improperly expanded the meaning to be given to the claim term "virtual matrix."

As explained at paragraph [23] of the subject application, in order to utilize common hardware and software with different seat sensor configurations, a virtual matrix is used to take the place of missing rows or sensors. The virtual matrix includes virtual cell locations to accommodate the sensors that have been removed from an ideal pattern. The virtual cells are assigned values based on data from the surrounding physical sensors. Optionally, as explained at paragraph [26] of the subject application, the virtual matrix can be generated as a full matrix having a maximum number of seat sensor positions where each physical sensor is mapped into a virtual cell. The central control unit can then utilize an algorithm that is common to all seat sensor configurations to determine the seat occupant weight.

Further, as explained at paragraph [25] of the subject application, the system operates in the following manner. The sensors are mounted within the seat bottom and generate a plurality of weight signals in response to a weight force applied to the seat bottom. The signals are transmitted to the central control unit where they are mapped into virtual cells in the virtual matrix. The output from the virtual cells in the matrix is combined and used to generate an output signal representing the seat occupant weight. Thus, it is very clear that applicant is transferring signals from the physical weight sensors into a virtual sensor cell matrix that uses data from surrounding cells to "fill in" data for virtual cells that have no corresponding physical seat sensor. One of ordinary skill in the art simply would not consider the weight and position sensor 260 of Blackburn, which includes a plurality of position sensors 300 and a plurality of weight sensors 302 that are physically mounted within the seat as corresponding to applicant's claimed "virtual matrix." Thus, Blackburn does not anticipate applicant's invention as set forth in claim 1. For similar reasons, Blackburn does not anticipate claim 35.

Claim 30 includes the steps of generating the virtual matrix to define a theoretical optimal pattern having a theoretical optimal number of seat sensor positions. For the reasons discussed above, claim 30 is also not anticipated by Blackburn because Blackburn does not disclose mapping weight signals from weight sensors into a virtual matrix. Further, there is no disclosure in Blackburn of the virtual matrix defining a theoretical optimal pattern having a theoretical optimal number of seat sensor positions.

The examiner cites column 9, lines 56-65 as teaching this feature, however, there is absolutely no mention of a theoretical optimal sensor pattern in this section of Blackburn. The array referred to as NxM in this section, is an actual physical array of sensors mounted within the seat bottom and not a virtual matrix defining a theoretical optimal pattern. One of ordinary skill in the art simply would not consider the array NxM of Blackburn as corresponding to applicant's claimed virtual matrix defining a theoretical optimal pattern having a theoretical optimal number of seat sensor positions, especially since the array NxM includes a plurality of position sensors 300 and a plurality of weight sensors 302 that define the actual physical sensor configuration. Thus, Blackburn does not anticipate claim 30. For similar reasons, Blackburn also does not anticipate claims 34 or 41.

Claim 26 includes the step of classifying each seat occupant into one of a plurality of predetermined occupant weight classes based on output from the virtual matrix. The examiner argues that this feature is taught at columns 11 and 14 of Blackburn. However, the examiner admits that Blackburn "does not teach a plurality of predetermined occupant weight classes." See Page 4, lines 5-6 of the subject official action. Thus, by the examiner's own admission, Blackburn cannot anticipate claim 26. For similar reasons Blackburn does not anticipate claim 39.

Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn in view of Steffens, Jr. (US 5626359). There is no claim 24 pending in the application.

Claims 29, 37, 40, 43-45 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn alone. For the reasons discussed above, Blackburn does not disclose, suggest, or teach the use of a virtual matrix as claimed by applicant.

Claim 37 includes the feature of control unit including electrically erasable programmable read only memory (EEPROM). The examiner admits that Blackburn does not specify the use of memory in the control unit. The examiner argues that "it would have been obvious to one skill in the art to substitute a means for another means that perform the same function in order to enhance system response." The examiner admits that there is no discussion of memory in Blackburn so there would not be any reason to "substitute" another means for something that does not exist in Blackburn. Further, the examiner's motivation for the modification is that system response would be enhanced. There is no teaching in Blackburn that indicates that the use of EEPROM enhances system performance. The only teaching of EEPROM in such a system is found in applicant's own disclosure, which cannot be used as motivation or suggestion to make a modification.

Claim 40 includes the feature of the virtual matrix comprising a theoretical sensor configuration stored within the control unit that includes an optimal number of theoretical sensor positions. The examiner argues, "it would be obvious to one of ordinary skill in the art to assign values to the theoretical sensor configuration to be considered the virtual matrix in order to have at least one value in order to work properly." The examiner's rejection has nothing to do with the claim language of claim 40. As discussed above, Blackburn does not disclose the use of a virtual matrix with a theoretical sensor configuration.

Claim 43 includes the feature of the predetermined sensor configuration being identical to the theoretical sensor configuration. The examiner uses the same argument for claim 43 that was used for claim 40. Again, this argument has nothing to do with the claim language of claim 43. Blackburn makes no mention of a theoretical sensor configuration, thus there can be no teaching of a predetermined sensor configuration that is identical to a theoretical sensor configuration. The only teaching of this feature is found in applicant's own disclosure.

Claim 45 includes the feature of the predetermined sensor configuration having a plurality of discrete sensor locations and further includes the step of generating a weight signal from each discrete sensor location. The examiner uses the same argument with regard to claim 43 that was used for claim 40 and 43. Again, this argument has nothing to do with the claim language of claim 45. Applicant respectfully requests that the examiner provide a more detailed explanation of the rejection for claims 40, 43, and 45.

Claim 44 includes the feature of the predetermined sensor configuration being different than the theoretical sensor configuration. The examiner argues that "Blackburn teaches the no limitation of the arrays use; therefore, it can be a difference between a predetermined sensor configuration and the theoretical sensor configuration." As this rejection makes no sense, applicant respectfully requests a clarification of examiner's position. The sensor configuration in Blackburn shows only one configuration. There is no teaching of a predetermined sensor configuration that is different than a theoretical sensor configuration. Further, the examiner has provided no motivation or suggestion to indicate why it would be obvious to modify Blackburn to include the feature of claim 44.

Applicant believes that all claims are now in condition for allowance. An indication of such is requested. Applicant believes that no additional fees are required, however, the Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds for any additional fees or credit the account for any overpayment.

Respectfully submitted,

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PATENT & TRADEMARK OFFICE

CERTIFICATE OF MAIL

I hereby certify that the enclosed Response is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 11 day of June, 2004.

Laura Combs

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